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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/894,448	Applicant(s) SEBASTIAN, PEROOR K.	
	Examiner Stephen M. D'Agosta	Art Unit 2683	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 7-12-2005.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-38 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,5-9,15-24,26-30 and 34-38 is/are rejected.

7)☒ Claim(s) 4,10-14,25 and 31-33 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-38 have been considered but are moot in view of the new ground(s) of rejection. The examiner has put forth new art to reject the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 8-9, 15, 17-21, 28-30 and 34 rejected under 35 U.S.C. 103(a) as being unpatentable over Cudak US 6,253,063 and further in view of Mushkin US 6,859,443.

As per **claim 1**, Cudak teaches a method (title) for adapting a wireless communications link between a transmitter and a receiver wherein information is communicated in a downlink from a BTS to multiple subscriber units and in an uplink direction from said multiple subscriber units and in an uplink direction from said multiple subscriber units to said BTS (abstract and figure 2 show uplink/downlink) comprising:

Establishing a RF spectrum as a communications channel in a wireless communication system (C1, L50-55 teaches RF communication between a mobile station and base station, as does figure 1)

Establishing a desired channel quality for uplink communications between said transmitter and said receiver over said communications channel (C2, L3-23 but specifically L18-23 where the mobile determines the C/I ratio, also see C2, L48-50 whereby the mobile selects a data rate based on the interference level detected), and

But is silent on Reducing said RF spectrum of said communications channel for uplink communications to achieve said desired channel quality.

Cudak teaches changing the data rate within a channel (C2, L3-23, but specifically L22-23 where the BTS determines the difference level of interference and establishes a final data rate which would be more/less depending upon the interference conditions, see claim 4, column 4).

Mushkin teaches a bandwidth allocation system whereby the sub-channel bandwidth can be varied (eg. increased or reduced), see figures 9a-9c and 10a-10d whereby the FDMA system can re-allocate bandwidth. Also see C4, L50-60, C6, L21-30 teaches a FDMA/TDD system, C7, L48 to C8, L10 and C10, L45 to C11, L4).

It would have been obvious to one skilled in the art at the time of the invention to modify Cudak, such that the RF spectrum is reduced, to provide means for supporting different rate modes (eg. full, half, etc).

As per **claim 8**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) and dividing said RF spectrum into uplink sub-channels (figure 2 top diagram shows divided RF spectrum for uplink channels and assigning at least one of said uplink sub-channels to said transmitter for uplink communications (figure 2 top diagram shows "UPLINK TX" which refers to sub-channels in the uplink channel sent from a transmitter).

As per **claim 9**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) wherein dividing said RF spectrum into uplink sub-channels includes dividing said RF spectrum into "n" uplink sub-channels of equal RF spectrum size, where "n" is an integer (figure 2, top diagram, shows uplink downlink sub-channels in equal portions that are an integer value).

As per **claim 15**, Cudak teaches a system (claim 11) for adapting a wireless communications link between a transmitter and a receiver wherein information is communicated in a downlink from a BTS to multiple subscriber units and in an uplink direction from said multiple subscriber units and in an uplink direction from said multiple subscriber units to said BTS said wireless communications system having an established communications channel with a known RF spectrum (C1, L50-55 teaches RF communication between a mobile station and base station, as does figure 1) and a desired channel quality in the uplink direction (C2, L3-23 but specifically L18-23 where the mobile determines the C/I ratio, also see C2, L48-50 whereby the mobile selects a data rate based on the interference level detected, also abstract and figure 2 show uplink/downlink):

But is silent on Means for reducing said RF spectrum of said communications channel for uplink communications between said transmitter and said receiver to achieve said desired channel quality if said desired quality will not be achieved using all of said RF spectrum of said communications channel for uplink communications.

Cudak does teach changing the data rate of the channel (C2, L3-23, but specifically L22-23 where the BTS determines the difference level of interference and establishes a final data rate which would be more/less depending upon the interference conditions, see claim 4, column 4).

Mushkin teaches a bandwidth allocation system whereby the sub-channel bandwidth can be varied (eg. increased or reduced), see figures 9a-9c and 10a-10d whereby the FDMA system can re-allocate bandwidth. Also see C4, L50-60, C6, L21-30 teaches a FDMA/TDD system, C7, L48 to C8, L10 and C10, L45 to C11, L4).

It would have been obvious to one skilled in the art at the time of the invention to modify Cudak, such that the RF spectrum is reduced, to provide means for supporting different rate modes.

As per **claim 17**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** including quality of service manager supplying desired quality to means for reducing said RF spectrum.

Cudak does teach an apparatus for both the mobile and BTS to make initial/final decisions on the current interference (eg. quality) and the setting/changing of the data rate (eg. is set initially by the mobile and can be changed up/down by the BTS) [C2, L18-23] which reads on a hardware/software service manager/controller that can change the data rate based on interference.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that a quality of service manager supplies desired quality of service for reducing RF spectrum, to provide means for hardware to monitor interference levels and raise/lower data rates based on said measurements.

As per **claim 18**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** including a time slot manager for allocating additional time slots to said uplink communications channel with said reduced RF spectrum.

Cudak does teach an apparatus at the BTS that makes a decision as to the final data rate based on the difference level of interference (C2, L18-23) which reads on a hardware/software manager/controller that allocates how many time slots to use.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that a timeslot manager allocates additional timeslots to uplink with reduced RF spectrum, to provide means for hardware/software to monitor interference levels and raise/lower data rates/timeslots based on said measurements.

As per **claim 19**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) and inherently includes a channel manager for dividing said established communications channel into uplink sub-channels (figure 2, top diagram shows partitioned uplink/downlink sub-channels).

As per **claim 20**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) and wherein said means for reducing said RF spectrum operates in response to a signal received from said transmitter at said receiver, wherein said receiver is located within said BTS and said transmitter is located within one of said multiple subscriber units (abstract and C2, L3-23 teaches both BTS and mobile can send/transmit RF spectrum settings/changes which reads on the claim).

As per **claim 21**, Cudak teaches a method (title) for adapting a wireless communications link between a transmitter and a receiver wherein information is communicated in a downlink from a BTS to multiple subscriber units and in an uplink direction from said multiple subscriber units and in an uplink direction from said multiple subscriber units to said BTS (abstract and figure 2 show uplink/downlink) comprising:

Identifying a RF spectrum that is available for use as a communication channel in a wireless communication system (C1, L50-55 teaches RF communication between a mobile station and base station, as does figure 1)

Establishing a desired channel quality for uplink communications between said transmitter and said receiver over said communications channel (C2, L3-23 but specifically L18-23 where the mobile determines the C/I ratio, also see C2, L48-50 whereby the mobile selects a data rate based on the interference level detected),

But is silent on Selecting a portion of said RF spectrum that enables said desired channel quality to be met for uplink communications.

Cudak does teach varying the data rate (C2, L3-23, but specifically L22-23 where the BTS determines the difference level of interference and establishes a final data rate which would be more/less depending upon the interference conditions, see claim 4, column 4).

Mushkin teaches a bandwidth allocation system whereby the sub-channel bandwidth can be varied (eg. increased or reduced), see figures 9a-9c and 10a-10d whereby the FDMA system can re-allocate bandwidth. Also see C4, L50-60, C6, L21-30 teaches a FDMA/TDD system, C7, L48 to C8, L10 and C10, L45 to C11, L4).

It would have been obvious to one skilled in the art at the time of the invention to modify Cudak, such that the RF spectrum is reduced, to provide means for supporting different rate modes.

As per **claim 28**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) and dividing said RF spectrum into uplink sub-channels (figure 2 top diagram shows divided RF spectrum for uplink channels and assigning at least one of said uplink sub-channels to said transmitter for uplink communications (figure 2 top diagram shows "UPLINK TX" which refers to sub-channels in the uplink channel sent from a transmitter).

As per **claim 29**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) wherein dividing said RF spectrum into uplink sub-channels includes dividing said RF spectrum into "n" uplink sub-channels of equal RF spectrum size, where "n" is an integer (figure 2, top diagram, shows uplink downlink sub-channels in equal portions that are an integer value).

As per **claim 30**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) further including:

Establishing a desired SNR ratio as said desired channel quality for uplink communications (Cudak teaches measuring/determining a C/I ratio which reads on an SNR as is known in the art, C2, L3-67)).

Assigning a number of "m" uplink sub-channels to said communications channel such that said desired SNR ratio is met for uplink communications where "m" is an integer (abstract and determination of C/I and an initial data rate and an integer number of sub-channels, C2, L18-24 which reads on a desired SNR and use of uplink sub-channel(s)).

As per **claim 34**, Cudak teaches a method for an RF communications system as discussed above **but are silent on**

Indicating to said transmitter, the frequency range of the reduced RF spectrum that is to be used for subsequent uplink transmissions, and

Mushkin teaches a bandwidth allocation system whereby the sub-channel bandwidth can be varied (eg. increased or reduced), see figures 9a-9c and 10a-10d whereby the FDMA system can re-allocate bandwidth. Also see C4, L50-60, C6, L21-30 teaches a FDMA/TDD system, C7, L48 to C8, L10 and C10, L45 to C11, L4).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify the combination of Cudak and Gilbert, such that a new frequency range can be indicated, to provide means for moving data calls to ensure optimal capacity is achieved.

Claims 2-4, 6-7, 16, 22-24, 26-27 and 35-38 rejected under 35 U.S.C. 103(a) as being unpatentable over Cudak/Mushkin as applied to the claims above, and further in view of Gilbert et al. US 6,016,311 (hereafter Gilbert) **or** Scholefield et al. US 5,742,592.

As per **claim 2**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) wherein reducing said RF spectrum is preceded by:

Determining a current channel quality for uplink communication between said transmitter and said receiver over said communications channel (C2, L3-23 but specifically L18-23 where the mobile determines the C/I ratio, also see C2, L48-50 whereby the mobile selects a data rate based on the interference level detected)

Reducing said RF spectrum of said communications channel to achieve said desired channel quality and utilizing said reduced RF spectrum of said communications channel for uplink communications if said current channel quality does not meet said desired channel quality (C2, L3-23, but specifically L22-23 where the BTS determines the difference level of interference and establishes a final data rate which would be more/less depending upon the interference conditions, see claim 4, column 4).

But is silent on

Utilizing all of said RF spectrum of said communications channel for uplink communications if said current channel quality meets said desired channel quality.

The examiner notes that while Cudak teaches increasing data rate if interference is low, there is no disclosure of using all RF spectrum. The examiner therefore has found a second reference that teaches adapting the data rate based on a user's need for higher performance (eg. when supporting broadband)

Gilbert teaches an adaptive TDMA system that can provide “a myriad of timeslot allocation schemes” (abstract, figures 2, 3a/3b and C4, L31-65). Gilbert states that virtually any uplink/downlink allocation can be established (C9, L19-22) which reads on “all RF spectrum”. Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that all RF spectrum is utilized, to provide means for providing as much spectrum to the user as required, up to the maximum.

As per **claim 3**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** further including allocating additional uplink time slots for uplink communications over said communications channel with said reduced RF spectrum to maintain a desired uplink transmission rate between said transmitter and said receiver over said communications channel with said reduced RF spectrum.

The examiner notes that while Cudak does teach allocating additional timeslots, it is not done in the context of maintaining a desired transmission rate, but rather in response to high/low interference levels.

Gilbert teaches an adaptive TDMA system that can provide "a myriad of timeslot allocation schemes" (abstract, figures 2, 3a/3b and C4, L31-65). Gilbert's asymmetric TDMA duplexing method advantageously allows channels to use time slots depending upon the needs of the user in uplink or downlink directions (C4, L57-65). Hence, Gilbert would use additional timeslots to achieve/maintain a desired data rate to support the user's need for more data throughput (eg. timeslots) if/when interference levels rose. Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that additional time slots are used with reduced spectrum to maintain a desired uplink rate, to provide means for an asymmetric time division duplexing scheme to be used to support additional timeslots when a desired uplink is required by the user.

As per **claim 4**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** taking time slots from other uplink communication channels to compensate for said additional uplink time slots that are allocated to said uplink communications channel with said reduced RF spectrum. The examiner notes that Cudak does not specifically state taking timeslots from other uplink channels – the mobile may have a fixed number of slots to use (as disclosed by Gilbert – see figure 1).

Gilbert teaches asymmetric time division duplexing that can take timeslots from other uplink channels (C7, L1-12, figure 2 and C7, L13-30). Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that timeslots are taken from other uplink timeslots as compensation, to provide means for supporting a required user spectrum by dynamically adjusting which timeslots are used/taken.

As per **claims 6**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** using time division duplexing (TDD) for downlink and uplink communications.

Gilbert teaches use of time division duplexing for both uplink and downlink communications (abstract and C4, L31-39).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that TDD is used, to provide dynamic allocation of uplink/downlink resources for optimal transmission of data.

As per **claim 7**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** wherein the RF spectrum for downlink communications is greater than the RF spectrum for uplink communications.

Gilbert teaches an adaptive TDMA system that can provide "a myriad of timeslot allocation schemes" (abstract, figures 2, 3a/3b and C4, L31-65). Gilbert's asymmetric TDMA duplexing method advantageously allows channels to use time slots depending upon the needs of the user in uplink or downlink directions (C4, L57-65). Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that the spectrum for downlink is greater than uplink spectrum, to provide means for large downloads to be transmitted when required.

As per **claim 16**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** further including allocating additional uplink time slots for uplink communications over said communications channel with said reduced RF spectrum to maintain a desired uplink transmission rate between said transmitter and said receiver over said communications channel with said reduced RF spectrum.

The examiner notes that while Cudak does teach allocating additional timeslots, it is not done in the context of maintaining a desired transmission rate, but rather in response to high/low interference levels.

Gilbert teaches an adaptive TDMA system that can provide "a myriad of timeslot allocation schemes" (abstract, figures 2, 3a/3b and C4, L31-65). Gilbert's asymmetric TDMA duplexing method advantageously allows channels to use time slots depending upon the needs of the user in uplink or downlink directions (C4, L57-65). Hence, Gilbert would use additional timeslots to achieve/maintain a desired data rate to support the user's need for more data throughput (eg. timeslots) if/when interference levels rose. Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that additional time slots are used with reduced spectrum to maintain a desired uplink rate, to provide means for an asymmetric time division duplexing scheme to be used to support additional timeslots when a desired uplink is required by the user.

As per **claim 22**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) wherein reducing said RF spectrum is preceded by:

Determining a current channel quality for uplink communication between said transmitter and said receiver over said communications channel (C2, L3-23 but specifically L18-23 where the mobile determines the C/I ratio, also see C2, L48-50 whereby the mobile selects a data rate based on the interference level detected)

Reducing said RF spectrum of said communications channel to achieve said desired channel quality and utilizing said reduced RF spectrum of said communications channel for uplink communications if said current channel quality does not meet said desired channel quality (C2, L3-23, but specifically L22-23 where the BTS determines the difference level of interference and establishes a final data rate which would be more/less depending upon the interference conditions, see claim 4, column 4).

But is silent on

Utilizing all of said RF spectrum of said communications channel for uplink communications if said current channel quality meets said desired channel quality.

The examiner notes that while Cudak teaches increasing data rate if interference is low, there is no disclosure of using all RF spectrum. The examiner therefore has found a second reference that teaches adapting the data rate based on a user's need for higher performance (eg. when supporting broadband)

Gilbert teaches an adaptive TDMA system that can provide "a myriad of timeslot allocation schemes" (abstract, figures 2, 3a/3b and C4, L31-65). Gilbert states that virtually any uplink/downlink allocation can be established (C9, L19-22) which reads on "all RF spectrum". Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that all of the RF spectrum is utilized for uplink if quality meets said desired quality, to provide as much spectrum as possible o the user when required and during low interference.

As per **claim 23**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** further including allocating additional uplink time slots for uplink communications over said communications channel to maintain a desired uplink transmission rate between said transmitter and said receiver over said communications channel with said reduced RF spectrum.

The examiner notes that while Cudak does teach allocating additional timeslots, it is not done in the context of maintaining a desired transmission rate, but rather in response to high/low interference levels.

Gilbert teaches an adaptive TDMA system that can provide "a myriad of timeslot allocation schemes" (abstract, figures 2, 3a/3b and C4, L31-65). Gilbert's asymmetric TDMA duplexing method advantageously allows channels to use time slots depending upon the needs of the user in uplink or downlink directions (C4, L57-65). Hence, Gilbert would use additional timeslots to achieve/maintain a desired data rate to support the user's need for more data throughput (eg. timeslots) if/when interference levels rose. Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that additional uplink timeslots are allocated, to provide increased spectrum as needed by the user.

As per **claim 24**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** taking time slots from other uplink communication channels to compensate for said additional uplink time slots that are allocated to said uplink communications channel. The examiner notes that Cudak does not specifically state taking timeslots from other uplink channels – the mobile may have a fixed number of slots to use (as disclosed by Gilbert – see figure 1).

Gilbert teaches asymmetric time division duplexing that can take timeslots from other uplink channels (C7, L1-12, figure 2 and C7, L13-30). Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, to provide means for taking timeslots from other uplink channels, to provide additional spectrum to the user as required.

As per **claim 26**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** using time division duplexing for downlink and uplink communications.

Gilbert teaches use of time division duplexing for both uplink and downlink communications (abstract and C4, L31-39). Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that TDD is used, to provide dynamic allocation of uplink/downlink resources for optimal transmission of data.

As per **claim 27**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) **but is silent on** wherein the RF spectrum for downlink communications is greater than the RF spectrum for uplink communications.

Gilbert teaches an adaptive TDMA system that can provide "a myriad of timeslot allocation schemes" (abstract, figures 2, 3a/3b and C4, L31-65). Gilbert's asymmetric TDMA duplexing method advantageously allows channels to use time slots depending upon the needs of the user in uplink or downlink directions (C4, L57-65). Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, such that the spectrum for downlink is greater than uplink spectrum, to provide means for large downloads to be transmitted when required.

As per **claims 35 and 37**, Cudak teaches a method/apparatus comprising;

Establishing a channel with an initial RF spectrum (C1, L50-55 teaches RF communication between a mobile station and base station, as does figure 1);

Measuring channel quality and determining if it fails a desired quality level (C2, L3-23 but specifically L18-23 where the mobile determines the C/I ratio, also see C2, L48-50 whereby the mobile selects a data rate based on the interference level detected),

But is silent on Reducing said RF spectrum of said communications channel for uplink communications to achieve said desired channel quality AND selectively increasing a number of time slots to offset throughput degradation resulting from the reduced RF spectrum.

Cudak teaches changing the data rate within a channel (C2, L3-23, but specifically L22-23 where the BTS determines the difference level of interference and establishes a final data rate which would be more/less depending upon the interference conditions, see claim 4, column 4).

Mushkin teaches a bandwidth allocation system whereby the sub-channel bandwidth can be varied (eg. increased or reduced), see figures 9a-9c and 10a-10d whereby the FDMA system can re-allocate bandwidth. Also see C4, L50-60, C6, L21-30 teaches a FDMA/TDD system, C7, L48 to C8, L10 and C10, L45 to C11, L4).

Gilbert teaches asymmetric time division duplexing that can take timeslots from other uplink channels (C7, L1-12, figure 2 and C7, L13-30). Further to this point is **Scholefield** who teaches accommodating varying throughputs by using multiple subchannels to transfer data (abstract and figure 2, shows using adjacent slots to send additional data).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Cudak, to provide means for taking timeslots from other uplink channels, to provide additional spectrum to the user as required.

As per **claim 36**, Cudak teaches a method for an RF communications system (title, abstract and figure 2 show uplink/downlink) and dividing said RF spectrum into uplink sub-channels and employing a subset of the sub-channels as the RF spectrum for the channel (figure 2 top diagram shows divided RF spectrum for uplink channels).

As per **claim 38**, Cudak teaches one or more antenna, at least a subset of which selectively coupled to the transceiver to enable a channel with at least one other apparatus (see figure 1, shows cellular system which has mobiles and BTS's that inherently use antennas to establish RF channels).

Allowable Subject Matter

Claims 4, 10-14, 25 and 31-33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

These concepts are not found, either alone or in combination, in the prior art of record.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Seymour et al. US 6,411,613
2. Cutforth GB-2321822

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 571-272-7862. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Primary Examiner
12-5-2005